# THE JOURNAL OF ANTIBIOTICS

## An International Journal Devoted to Research on Bioactive Microbial Products

VOLUME 44

1991

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# THE JOURNAL OF ANTIBIOTICS

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**Volume 44**

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Note by BRUCE B. JARVIS, CATHERINE A. ARMSTRONG & MING ZENG: Use of resins for trichothecene production in liquid cultures. J. Antibiotics 43, No. 11, pp. 1502~1504, November 1990

*In* May issue: 44 (5) C-2

Original Article by G. H. BAKER, R. J. J. DORGAN, J. R. EVERETT, J. D. HOOD & M. E. POULTON: A novel series of milbemycin antibiotics from *Streptomyces* strain E225. II. Isolation, characterization, structure elucidation and solution conformations. J. Antibiotics 43, No. 9, pp. 1069~1076, September 1990

*In* October issue: 44 (10) C-3

Communication to the Editor by J. B. MCALPINE, S. J. SWANSON, M. JACKSON & D. N. WHITTERN: Revised NMR assignments for rapamycin. J. Antibiotics 44, No. 6, pp. 688~690, June 1991